CLAIMS

What is claimed is:

1. A low-noise buffer for a digital logic signal, comprising:

an analog amplifier having a unity-gain bandwidth substantially greater than a maximum switching rate of the digital logic signal;

a converter circuit operative to convert the digital logic signal to a ramp signal provided as an input to the analog amplifier, the ramp signal having a slope determined by a bias current and an input capacitance of the analog amplifier; and

a bias circuit operative to generate the bias current in a manner ensuring that the bias current varies as the input capacitance of the analog amplifier varies due to variations in the manufacturing process of the buffer, such that the slope of the ramp signal remains substantially constant despite the variations in the manufacturing process of the buffer.

2. A low-noise buffer according to claim 1, wherein the analog amplifier comprises:

an input stage including a differential pair of PMOS transistors in cascode configuration; and

a differential-to-single-ended, push-pull output stage.

3. A low-noise buffer according to claim 1, wherein the ramp circuit comprises a switched current source, the magnitude of the current supplied by the switched current source being established by the bias current.

4. A low-noise buffer according to claim 3, wherein the ramp circuit comprises:

ATTORNEY DOCKET NO. TI-37302 (UNITI-182XX)
WEINGARTEN, SCHURGIN,
GAGNEBIN & LEBOVICI LLP
TEL. (617) 542-2290
FAX. (617) 451-0313

a first switched current mirror operative to generate current of one polarity when the digital logic signal has a first logic value; and

a second switched current mirror operative to generate current of the opposite polarity when the digital logic signal has a second logic value.

5. A low-noise buffer according to claim 1, wherein the bias circuit comprises a switched-capacitor resistor across which a predetermined reference voltage is placed to generate the bias current, the switched-capacitor resistor including a capacitor having capacitance that varies as the input capacitance of the analog amplifier varies due to variations in the manufacturing process of the buffer.

ATTORNEY DOCKET NO. TI-37302 (UNITI-182XX)
WEINGARTEN, SCHURGIN,
GAGNEBIN & LEBOVICI LLP
TEL. (617) 542-2290
FAX. (617) 451-0313